

# IWOCS Umbilicals

## Providing control and chemical hydraulic lines in flexible designs

An installation workover control umbilical is used to provide temporary hydraulic connections, electrical power/control, and chemical supply to subsea trees and related hardware.

Complete IWOC systems are designed for both rig and vessel based operations and have unique characteristics allowing them to withstand multiple deployments during their operational life.

Typical applications include:

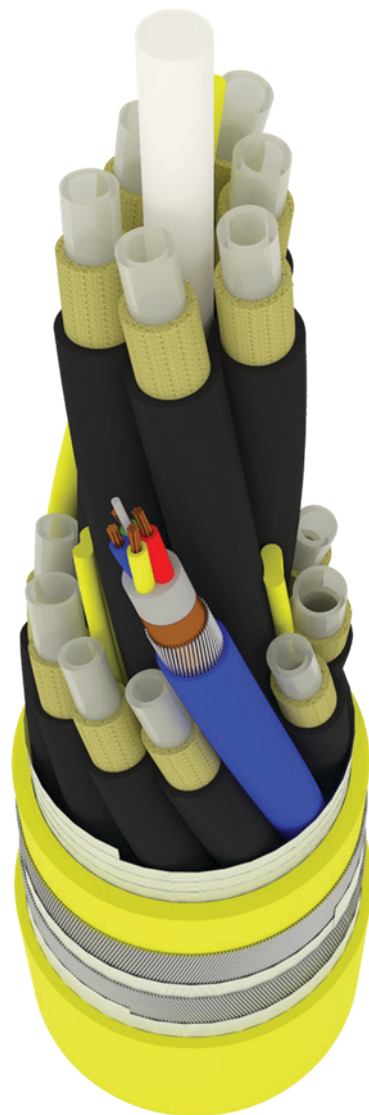
- » Tree installation
- » Commissioning
- » Workovers
- » Intervention and troubleshooting
- » Plug and abandonment
- » Decommissioning

### FEATURES

**Extensive track record**

**Inherent load bearing capabilities**

**Broad hose and cable catalog**



# IWOCS Umbilicals

Oceaneering's IWOCS rental portfolio is the largest in the world and the system results in greater than 99% uptime. Oceaneering has completed more than 800 jobs and has 25 years of experience in designing, manufacturing, and providing IWOCS services. Our IWOCS umbilicals can be supplied as part of a fully-functional workover system or integrated into a customer's existing IWOCS reeler.

## Advantages and Characteristics

- » Oceaneering's field proven catalog of critical IWOCS umbilical components are designed and manufactured in-house to meet reliability and uptime requirements
- » Umbilicals are compatible with clamped riser, guide wire, and LARS open water deployment methods
- » High pressure thermoplastic hoses overcome reservoir pressures and deliver fast system response times
- » Broad chemical compatibility with commonly used fluids (supported by historical test data)
- » Fiber reinforced umbilicals provide lightweight, fatigue resistant protection to internal components during deployment

| Parameter   | Value  |
|---|--|
| Strength member   | Fiber reinforced using braided or helical application of aramid                    |
| Manufacturing length capabilities                                       | 11,000 ft / 3,300 m typical, longer lengths can be provided, if necessary          |
| Maximum allowable installation tension, breaking tension and crush load | Designed to meet requirements  |
| Axial, bending, and torsional stiffness                                 | Optimized during design  |
| Tension / Torsion Factor  | Minimized during design  |
| Design life   | 25 years, as standard. Operational life and deployment cycles subject to analysis. |
| Industry specification compliance                                       | ISO 13628-5 / API 17E<br>NORSOK U-001<br>DNV-OS-F101                               |

# Thermoplastic Hoses and Electrical Cables

## Control Hoses

Oceaneering® IWOCs hoses use Nylon liners and are supplied in a wide range of hose bore sizes and working pressures. The hoses provide high flexibility and chemical compatibility with a majority of control fluids. Typically designed with a safety factor of 4:1, our IWOCs hoses provide a reliable method of controlling subsea equipment in the most challenging environments.

| Part Code | Internal Diameter | Design Working Pressure (psi) |
|-----------|-------------------|-------------------------------|
| 3H3.5     | 3/16 in           | 3,500                         |
| 3H5       | 3/16 in           | 5,000                         |
| 3H7.5     | 3/16 in           | 7,500                         |
| 3H10      | 3/16 in           | 10,000                        |
| 4H5       | 1/4 in            | 5,000                         |
| 4H7.5     | 1/4 in            | 7,500                         |
| 4H10      | 1/4 in            | 10,000                        |
| 4H15      | 1/4 in            | 15,000                        |
| 6H3       | 3/8 in            | 3,000                         |
| 6H5       | 3/8 in            | 5,000                         |
| 6H7.5     | 3/8 in            | 7,500                         |
| 6H10      | 3/8 in            | 10,000                        |
| 8H3       | 1/2 in            | 3,000                         |
| 8H5       | 1/2 in            | 5,000                         |
| 8H7.5     | 1/2 in            | 7,500                         |
| 8H10      | 1/2 in            | 10,000                        |

## Chemical Hoses

Thermoplastic hoses are also used for injection of chemical fluids. When the fluids are kept at a low pressure and/or when injection fluids are less dense than seawater, hose collapse becomes a design consideration. Oceaneering offers a range of medium and high collapse resistant hoses for inclusion in designs, dependent on application.

| Part Code | Internal Diameter | Design Working Pressure (psi) |
|-----------|-------------------|-------------------------------|
| 8PH       | 1/2 in            | 5,000                         |
| 8P7.5     | 1/2 in            | 7,500                         |

## Electrical Cables

Oceaneering offers low voltage electrical cables up to 3.0 (3.6) kV rating for use in IWOCs umbilicals. The cables are fully belted designs which are suitable for use in deepwater environments, with options available including armor wire or aramid reinforcement.

| Parameter                            | Value  |
|--------------------------------------|--|
| Conductor configurations             | Pair / Triad / Quad  |
| Conductor size                       | 3.9 in <sup>2</sup> - 77.5 in <sup>2</sup> /<br>2.5 mm <sup>2</sup> - 50 mm <sup>2</sup> |
| Maximum operating voltage            | 1.8 / 3.0 (3.6) kV   |
| Screening                            | Optional copper screen<br>options available with drain<br>wire                           |
| Reinforcement                        | Optional armor wire / aramid<br>reinforcement  |
| Industry specification<br>compliance | ISO 13628-5 / API 17E<br>IEC 60502 Part 1  |

Note: Typical IWOCs hose size range shown. Please contact us for availability of hose sizes above 1/2 in.





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